

now being taken to protect Sea-fowl during the breeding-season, and stated that it was proposed to bring in an Act of Parliament on the subject during the present session.

The following papers were read:—

1. Notes on the mode of Capture of Elephants in Assam.

By Dr. A. CAMPBELL, late Superintendent of Darjeeling.

By far the greater number of the Elephants for the supply of the Bengal markets are now caught in Assam; the Dooars of Bootan are so iniquitously misgoverned that the Elephant-catchers nearly shun them altogether.

The Nipal Tarai furnishes Elephants for the marts of the central and western provinces; Mymensingh and Sylhet for lower Bengal, &c. &c.

The people who are principally engaged in catching Elephants for upper Bengal live in the northern parts of the Purneah and Rungpoor districts. Titalya is the most central position for the collection of Elephants by these people, and it is close to all the routes from the Elephant-catching districts*.

The Elephant-merchants who conduct the trade between the eastern districts and other parts of India come from the central and western provinces; some even from the Punjab, Cashmere, and Cabool.

The men who keep koonkis and supply the funds for catching Elephants are known as "Keda Walas." They often take their own Elephants for sale to the Hajipoor Fair, or further west; but usually look to the merchants, zemindars, baboos, &c. of their own districts as purchasers. At the Nek Mured Fair, in the Dinajpoor district, annually held in April, there is a good deal of business done in Elephants.

An Elephant-catcher (or keda wala)'s establishment consists—1st, of "Koonkis," *i. e.* tame Elephants trained to hunting and catching wild ones; 2nd, "Phanaitis," or noosemen; 3rd, Lohattias, or Elephant-drivers, who sit on the croup and urge on the koonkis with an iron-spiked mallet; 4th, mates, or under drivers; and 5th, an abundant supply of ropes and cables for catching and tying up their gigantic quarry.

The old system of decoying or driving wild Elephants on pits dug for them is altogether exploded; and the lasso, or "phan," is the only mode now employed to catch them.

The process is described as sufficiently simple, although it is attended with some danger. It is very extraordinary to hear a thin miserable-looking fellow (as many of the "phanaitis" are) describing in the quietest way possible how he has caught very large and fierce Elephants.

The usual mode seems to be to form the "keda," or encampment,

* See Hooker's Himalayan Journals, vol. i. p. 181.

at a likely place outside the forest and near water, generally selected on intelligence of its being the haunt of wild Elephants, or by finding their fresh trail.

From this you take out the koonkis, three or four together, and reconnoitre in all directions in the open places at early morning or in the afternoon; for the wild Elephants always keep to the heavy forest during the heat of the day, coming into the more open spots morning and evening only. When any of your parties have found a "khanja," or herd, it singles out one and gives immediate chase, sometimes even with one koonki only, if you have no more in your "keda," and when the quarry is a small one; but it is better to do so with two, and three are requisite to catch and master a large animal. The chase is kept up until one of the koonkis gets alongside the wild Elephant, the great object being to lay a koonki on either side of the wild one, as fast as possible. When alongside and he sees his opportunity, the "phanait" (nooseman), who drives his Elephant and holds the open noose with both hands above his head, lets it fall over the wild one's head and on the trunk, which in running is pendent to the ground. Immediately the noose touches the trunk, the animal by an instinct which is fatal to its liberty coils it inwards, and by this movement it passes at once under the neck. The lohattia who holds the coil of the lasso immediately pulls upon it, and the koonki is kept close upon the wild one and pressing against it until another koonki comes on the opposite side and a second noose is delivered. When this is done both koonkis move off in opposite directions, and thus in a short time the wild Elephant is suffocated and stretched on the ground between them. This takes some time, however, when the noosed animal is a powerful one, as it sets off at speed and struggles long and violently before it is choked and down. As soon as it is, the running nooses are loosed to give the animal breath, and a stopper put on each to prevent their running. The two koonkis again press on each side; and by this means and one or two more pushing from behind, the captured animal is forcibly dragged away to the keda, where it is strongly picketed and starved into tameness. After a month or two it is quiet and tractable enough to be marched homewards, being in the meantime led out frequently with koonkis, and gradually accustomed to a rider.

During the first six months fresh Elephants become thin and weak-looking, and then begin to pick up again. During the first rainy season (or, rather, during August, September, and October of the first year) they are most liable to illness and death. The risk decreases the second season, and is not great in the third, after which they are considered "pucka," *i. e.* safe and acclimatized.

There is no procuring any data by which to arrive at the rates of mortality of fresh Elephants. It seems to depend on circumstances quite unknown to the catchers (who suffer most from it), and is therefore always attributed to "kismut," chance. Sometimes all the catchings of a season will die in one man's hands; at other times he will have a succession of seasons without any losses. The

“keda wala” is emphatically described as always being in the way of wealth or ruin. He is an “Ameer” or “Fugeer,” *i. e.* a “prince or a beggar;” so proverbially uncertain are his gains, and his trade so full of risks.

The proportion of adult females caught is probably as eight to one. This arises from two causes. They are less violent and more easily subdued; and it is rare to find more than one male with a whole herd of females, and he is always an immense one and rarely to be mastered.

The catchers and dealers give numerous divisions or varieties of the Elephant, such as Muringi, Kumulia, Kooji, &c. They also notice the peculiarities of arched and straight backs; but it is sufficient to attend to the following for practical purposes. The males are tusked or tuskless, *i. e.* “Dantal” or “Mukuna;” one-tusked ones are prized by Hindus. One with the left tusk is a “Ganess,” God of Wisdom; with the right a “Manik dunta.” The females are maiden or mothers, the terms being “Sareen” and “Dohi;” a barren one is also a “Sareen,” and the Dohi is not reckoned of equal value. The Sareen is distinguished from the Dohi by the small teats and undeveloped mammæ. A male is 20 per cent., at least, more prized than a female, on account of his greater strength and powers of endurance. It seems difficult to ascertain the period required for the full growth of the Elephant. After comparing many opinions and statements, I make it twenty-five years, and the known age eighty-five in the same manner. The female goes eighteen months with young, and gives suck for two years. In addition to the smaller size, youth is indicated by a general smoothness and roundness of the face and trunk, with an almost unmistakable expression of simplicity and innocence as you examine the face standing right in front. The central depression on the top of the head is but faintly developed in youth, while in an aged animal the coronal protuberances stand up prominently. The ears in youth and middle age are thin, light, and unbroken along the outer margin; in age they are large, flapping, thick, and jagged.

There is no particular breeding-season. “Elephants, like cows in India, have young all the year round.” The mother shows great affection for her young, and even when chased by the catchers will not leave it, if it gets into trouble or is too young to follow. The mothers frequently fall an easy prey on this account, allowing themselves to be noosed while they are helping on the young one. A young one of six months will fly off when the mother is taken; under that age it will stick to the captive mother. Twins are unknown.

The catching-season is from November to July; June is the month in which the greatest number are taken. The fresh grass and reeds, after the annual burning, is then greatly relished by these animals, who come far out of the forest to seek it. The Elephant is gregarious in the highest degree: herds of more than a hundred are sometimes seen; fifty, thirty, and twenty are common. Sullen males, which have been driven out of the herd by hard fight-

ing, are the only solitary ones to be met with. Large males with a herd are rarely ventured on by the catchers; they are bold and ferocious. The females and young males take instant alarm at the approach of the koonkis; and sometimes a whole herd becomes bewildered with fright on seeing them, and breaks up in all directions. This is the harvest of the catchers, and a bold and expert "phanait" will sometimes noose three wild ones out of one herd. So soon as he can get his "phan" off the neck of a prostrate one, he sets upon another, and similarly on a third. This prowess and luck are rare, but they happen occasionally. Mr. P. had a phanait who did this two seasons. He was a "Koch," and the quietest, most unpretending fellow in the world out of the keda. In the field he was a perfect Nimrod, full of energy and life, and for six or seven years he brought eight to twelve Elephants home annually of his own noosing. His pay was 10 rs. per mensem at home, 12 when in the field, and an annual present of a pair of silver bangles weighing 20 rupees, and a pair of gold earrings worth 20 rs. more. These "honorary distinctions" gained, he used to take a short leave to his home, when he bestowed them on his wife, and again took to the forest in search of fresh laurels.

"How many Elephants have you caught in your time?" I one day asked Mr. P. "I cannot tell you how many," he replied; "but I was seven years engaged in the business; one year I caught 180, some years I got 100, some 80, some 60." We may safely put down 1000 to his name, I think; and this gives a pretty good idea of the supply and demand in this business. Mr. P.'s "keda" was always a strong one, ranging from ten to twenty koonkis.

Although I have set down eighteen months as the most generally adopted period of the Elephant's going with young, I must state that it is not universal in this part of the country. Rambullub Sah of Choora Bundur, on the Bootan frontier, who has been an Elephant-catcher for many years, says the period of gestation is twenty-two lunar months; and this is supported by a case of gestation which originated in his own stables, and in which the union of the sexes was known and recorded—a very rare case in the tame state; but this one is quite authentic, *i. e.* the conception, gestation, and birth. The record of the period of gestation I have not seen, but all the people of Choora Bundur are familiar with the facts, and many of them corroborate the twenty-two months' period.

In 1849 I saw an infant Elephant that had been born in the October of 1848. He was with his mother. She had been caught in June 1847; and although then pregnant, there were no signs of unusual size until the January following. This case does not help to fix the limit of gestation; but it proves that sixteen months is *under* that period. This female had immensely large breasts; and I tried to procure some of the milk to taste, but in vain. She lay down on her side at the command of the Mohout, but swung her trunk about and roared when we commenced pulling her teats. The young one applied himself to the breasts every five minutes, and for a minute or so only. The trunk appears quite in the way of a sucking Ele-

phant; but it is dexterously turned upwards and to one side when he is at the breast; and the usual position is standing at right angles with the mother. The young one generally sleeps under the mother's belly, lying on his side, his legs stretched out straight. He not unfrequently lies down under other Elephants, and is quite fearless among them, they always treating him kindly, never hurting him. "The smallest Bucha may go up to the largest male, even when he is Musth*, and he will be kindly treated." The large one will welcome him with his trunk, laying it over him and smelling him.

2. Note on the Sublingual Aperture and Sphincter of the Gular Pouch in *Otis tarda*. By JAMES MURIE, M.D., F.L.S., Prosector to the Society.

The following memoranda may be regarded as addenda to the paper on the gular pouch of *Otis kori* and *O. australis*, previously communicated by me to the Society (see P. Z. S. 1868, p. 471). Since then an opportunity has been afforded me of examining a male specimen of the Great Bustard at least six years old, judging from the time the bird had been in the Society's possession. A gular pouch was present, as described underneath.

On looking into the mouth of the bird while the tongue lies between the rami of the lower mandible, no opening into the gular pouch is seen; but when the tongue is raised and the parts held as in the act of gaping an aperture easily admitting one's finger is observed. This is situated beneath, and almost an inch behind, the tongue itself; in fact it lies underneath the upper larynx, occupying the space between it and the submandibular deep and cutaneous tissues. In the stretched condition of the parts above spoken of (displayed in the figure, p. 141), the said aperture (*a*) is oval in form, assuming almost an elliptical figure if its raised whitish marginal membrane is followed. This marginal fold of membrane or lip (*l*) is, indeed, the true boundary of the aperture itself; but as it is partly adherent to the tissue beneath the uro-hyal and to the subcutaneous textures between the rami of the lower mandible, it causes the opening to appear almost arched instead of an acute ellipse, as it truly is when the tongue is pulled out and the skin near the "beard" is held tense. A second short raised membranous fold (*f*) proceeds at an acute angle outwards from the middle of each outer side of the former one and goes to the tissues covering the muscles lying beneath the thyro-hyals. These two latter duplications of the faucial membrane permit of stretching of the parts when the thyro-hyals are by any means thrown outwards; and they may also influence the tonicity of the membrane of the aperture itself when its marginal lips

* The tame males, and males driven out of a herd, are subject to fits of temporary fury, or madness. In this state they are said to be "Musth."